Dover National Test Site (DNTS)

The DNTS makes it possible to conduct contained releases of DNAPL into an uncontaminated aquifer

Cleanup of DOD hazardous waste sites is a problem of tremendous scale and technical complexity. Reliable, cost-effective, proven cleanup technologies able to meet DOD restoration goals are needed. Commercialization is hampered by poor technology transfer and lack of adequate facilities for demonstration of innovative remediation concepts under controlled conditions.

SERDP is addressing these obstacles by establishing the Tri-Service and EPA National Environmental Technology Test Sites (NETTS) program, a network of well-characterized test sites where technologies can be field-tested under known conditions against established SERDP NETTS standards. The DNTS is the AFRL/MLQ contribution to the SERDP NETTS program.

Need for a Chlorinated Solvent Test Site:

Soil and groundwater contamination with industrial solvents is a major problem for the nation and one of the most intractable of all cleanup challenges. Common solvents such as perchloroethylene (PCE) and trichloroethylene (TCE) have been used for decades to maintain weapon systems. If spilled on the ground, these liquids filter through the earth under the influence of gravity. Denser than water, they continue to trickle even below the water table until they either simply play out as ganglia, or encounter a soil layer they cannot penetrate, forming a pool. These pools or ganglia are nearly impossible to locate or remove, yet they provide a chronic source of contamination to passing groundwater.

The DNTS is located at Dover AFB, DE. Strong support from Dover AFB and an enlightened, progressive regulatory climate have made it possible, for the first time in the United States, to conduct carefully planned, well-controlled, experimental releases of DNAPL into portions of an aquifer. Technologies to locate, monitor, or clean up chlorinated solvent contamination of the subsurface are the focus of this test site. High-quality experiments are being sought.

Prospective Demonstrators Should:

- Consult with POCs listed below
- Obtain Dover NETTS Management Plan
- Follow simple NETTS process for field demos

The DNTS Infrastructure Provides:

- On-site Management Staff
- Regulatory and Permitting Interface
- Unique Contained-release Cells
- Fully characterized Site
- Remotely Accessible Data Acquisition and Control System
- Limited Laboratory Capability
- SERDP Technology Demonstration Protocols

Researchers are challenged to develop technologies to first locate, then remove subsurface DNAPL material. However, DNAPL behavior in the subsurface is very poorly understood. Since nearly one-third of Air Force contaminated sites have a DNAPL component, and subsurface DNAPL cleanup is usually impossible at any price, there is a clear need to develop a better understanding of DNAPL behavior, better monitoring technologies, and innovative, cost-effective cleanup technologies. The DNTS provides researchers with the opportunity to eliminate the uncertainty of DNAPL behavior from their research.

A three-acre portion of the DNTS test site is designed for in situ controlled-release tests cells for contained-release experiments. These cells are carefully constructed with double walls of special sheet piles keyed into an underlying aquitard. Flow control, regulatory and experimental monitoring, and managed hydraulic gradients allow for careful mass balance determinations.

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